

EXECUTIVE SUMMARY

The District Department of Transportation (DDOT) undertook a comprehensive study entitled *District of Columbia Streetlight Policy and Design Guidelines* to develop a uniform streetlight policy throughout the City. This study aims at providing the District with well-defined guidelines and standards for future streetlight deployment. The guidelines will be implemented in an evolutionary fashion along with future road construction projects. The streetlight pole replacements will follow the defined guidelines rather than the usual practice of replacement-in-kind.

This study encompasses research on technology, design principles, and policies; vendor interviews; interviews with other state agencies; review of existing DDOT practices; and recommendations for implementation. During the study, DDOT formed a panel of advisors to serve on a steering committee to ensure that the project addressed concerns from the stakeholders. The steering committee consisted of representatives from various agencies and citizen groups. The committee held a series of meetings to define the direction of the project, evaluate various alternatives, and provide specific recommendations on various aspects of the streetlight policy issues. Finally, the draft policy was kept open to public comments for a period of time. This process included citizens' comments, review by other agencies and a public meeting.

A summary of the policy recommendations is presented below.

OVERVIEW OF MAJOR CHANGES

The following significant deviations from the current practices were adopted:

1. The existing widely used Cobrahead fixtures may be substituted (except for 5A Alley poles) by a new Teardrop fixture with decorative arms. Teardrop fixture was preferred because of its aesthetic and architectural qualities for outdoor lighting. However, the extent of substitution of the Cobrahead fixtures with Teardrop fixtures depends entirely on the funding situation and priority, which the District Government should evaluate before establishing the policy. A decorative arm with a Teardrop fixture has been selected by DDOT.
2. Refractive, prismatic globes have been accepted for replacing the currently used plain globes. Refractive globes are a major achievement in the field of optical technologies and provide greater level of illumination with minimal light “loss” by redirecting lights in the desired direction. The prismatic optical system directs the light into the desired pattern, allows maximum spacing with excellent uniformity, and minimizes upward wasted light. The refractive globe is expected to reduce direct glare by softening and spreading the light being distributed from the light source.
3. White-light lamps may replace the yellow-light, high-pressure sodium lamps in the future (except for alleys), when their life-cycle cost becomes comparable to that of yellow-light lamps.

HARDWARE RECOMMENDATIONS

Various types of streetlight hardware are recommended for various conditions based on:

1. Non-historic streets (underground power line or overhead power line)
2. Historic streets
3. Special Streets

Some hardware selection will also be based on the context of the surroundings.

For non-historic areas with underground power lines, the citizens will be given an opportunity to select either a Decorative Teardrop (alternatively Cobraheads, if cost prohibits) or Upright poles in place of the existing Cobrahead pendant poles. The pendant poles are recommended for non-historic streets, as they are economical. For non-historic areas with overhead power lines, the lighting arm is the only option for selection. A Decorative Teardrop arm is preferred; however, Cobraheads can be used, if cost prohibits.

The use of upright poles (e.g., Numbers 14, 16, 18) will continue for historic streets.

Several important streets were designated as Special Streets (alternatively known as Capital Avenues), for which Twin-20 poles were generally recommended. A decorative Teardrop arm will be used where overhead power lines exist.

The developed guidelines will apply to the City in general; however, areas with their own regulations are exempt from these requirements or portions thereof. These exempt locations include, but are not be limited to, the Downtown Streetscape Area, Business Improvement Districts (BIDs), and Monumental Core Area. DDOT reserves the right to exempt certain areas on a case-by-case basis and pick any special streetlight fixture.

DESIGN PRINCIPLES

The following design principles are made part of the policy:

1. The guidelines of the American Association of State Highway and Transportation Officials (AASHTO) were adopted as the District's policy for lighting criteria.
2. The design should use maximum spacing of streetlight poles. A minimum spacing between poles of 60 ft has been specified; however, it is not a recommendation, but only an absolute minimum. The designer should ensure that the spacing fulfills the following objectives, yet meeting the AASHTO guidelines:
 - Minimum number of poles
 - Lowest acceptable wattage
 - Maximum possible spacing
3. The design should be based on lower wattage lamps so as to provide flexibility for using higher level of illumination in the future, if necessary. This can be easily done by replacing lower wattage lamps with higher wattage lamps. For example, No. 16

poles should be designed for a maximum 250 Watt while up to 400 Watt is allowed; No. 14 poles should be designed for a maximum of 100 Watt while up to 150 Watt is allowed.

4. The design should avoid using 400-Watt conversion kits in residential areas.
5. The height of the pole should be determined based on the context of the surroundings, such as the height of buildings, roadway width, sidewalk width, etc.
6. The design must consider reduction of glare into drivers' and pedestrians' eyes, and enhancement of visibility. Appropriate refractive globes can effectively reduce direct glare by softening and spreading the light distribution. Shields can also be used to aim the lights so that they are not directly visible from the roads, alleys, pathways, and windows, as needed.

CONCLUSIONS

DDOT should periodically review these guidelines and make any necessary modifications within the general framework. AASHTO is currently developing a revised streetlighting guideline and some of its contents have been used in this document. Once AASHTO finalizes this guideline, any additional appropriate elements should be incorporated in DC Policies.

DDOT should also assess the overall technology and its cost-effectiveness from time to time to take advantage of new developments offering enhanced safety, economy and aesthetics. An extensive use of Teardrop remains a question of funding availability and agency priority. Similarly, the use of metal halide or other similar white light-producing lamp is also a question of cost; therefore, its cost should be monitored in future.